REGARDING CLAIM 11 (FORMER CLAIM 1):

Clear difference between Sitlick's (7,098,392) and this invention is in the way to renew the image of partitions.

Sitrick's invention

First let's look in Sitlick's.

What is "**Slice**" in Sitlick's? It is section cut out from original score image. Original includes scanned image from printed paper score. It is introduced for managing the difference between original image size and display size. For example, original is B4 portrait, but display is 12" landscape. Sitlick does not use simple reduction or expansion to fit it in the display. He takes the method of cutting out **slices** from original and re-arranging them on the display. If there are 12 bars in one system in original, but display can contain only 9 bars in a system, cut out 9 bars from original. And remaining 3 bars and 6 bars in the next system will placed in following system in display. Contents in each page on display become different from original. Some part of original overflows and is placed in the following page. This purpose is described in C30 Line 50 ~ 62 and C31 line 57 – 61.

He uses word "**paginate**" as to decide cut-line of page in the music flow (C31 line 62 – C32 line 3). It is not page-turn but preparation before real-time run. He list up a few ways to do it.

He describes in detail one of pagination method (Fig. 23, Fig 25, C32 Line 4 –C33 Line 13). First cut out 1st slices with horizontal cut-line (2304), and then cut out 2nd slices (2305) from the 1st slice. Then order 2nd slices (2307, 2308) and do pagination by packing 2nd slices in logical group as far as they fit in one page (2311, 2312). He calls page on display as "logical group". We understand some number of 2nd slices in logical group are displayed together on display.

Now, how these 2nd slices are displayed in time-like? Are they displayed all at once or in different time? He shows options of "**page turning**" at C44 line 41 – 50 and more detailed in C45 line 64 – C46 line 25. There are 3 options.

1st option: Quick or Instant page-turn: immediate replace

2nd option: Step change page-turn: immediate replace first half, then after delay second half. Here delay time is user-defined or system default: means fixed value in run time.

3rd option: **reveal page-turn**: progressively reveal themselves to replace the older display. "The speed of transition can be controlled by musician, or controlled by a system **default value**" (C46 line 22 – 24). Means once set up, it is constant.

What can **initiate** a page-turn? Descriptions about this matter scatter in many places in the whole description, but mainly in C46 – C49, Fig 14.

Anyway, all is **page-turn** in Stlick's. Once initiated, it does not stop and whole page is replaced by new page.

Problem with page-turn (including Sitrick's)

In long history of music, people turn page as the nature of things. It has been necessary things with paper sheet music. But, with electronic display still one time page-turn is conducted. Control system gets timing of reaching end of page in various ways and turn **whole** page. But many musicians wants to see next page earlier. Without earlier view, it is like as full speed turn in the town in driving a car, what comes next is unknown until page-turn. So, early initiation of page turn with Stlick's 2nd or 3rd page-turn option improve the matter generally. But after initializing page-turn, last part of page may be played in very slow tempo or conductor may stop and start talking or last part may be practiced repeatedly. System does not recognize these happening and overwrite the last part. In either case human initiates or system automatically initiates page-turn, musician can not have peace of mind at the end of page.

Solution of page-turn problem with this invention (Claim 11)

With this invention, the system does not replace whole page with one initiation timing. But, display is divided into plural partition (second instruction group), and for each **individual** partition **different** renewal timing is defined (third instruction group).

How it works? When playing point comes to the bottom system or staff in display, The top system or staff already have renewed. And while playing point stay in the bottom system or staff, even music stop or repeatedly practiced, the playing system or

staff is not renewed. When playing point moves to the top of display, the last staff still remains there. So, It is possible to practice repeatedly a portion ranging from the bottom staff to the top staff, which is not possible in conventional page-turn way. For each partition, the **best timing** to be renewed is designed and given **individually**.

It may looks as extreme case of Sitrick's 3rd page-turn option (reveal). But, because timing for each partition can be defined individually in this invention, more sophisticated and safer way of display **transition** is realized by this invention. It gives musicians complete peace of mind. It is not page-turn any more, because there is no single timing of initiation of page-turn. All past inventions have sticked to page-turn. So, this invention gives new idea.

I attached Fig. A again. Each hatched partition is assigned music time corresponding to the point marked by "x". For example at sub figure (D), playing point is in the bottom staff and fifth partition is renewed. First to fourth partitions has already renewed. When playing point moves to end of third partition (sub figure (H)), the bottom partition is renewed. While playing point is in the range of from fourth to ninth partition, no renewal happens. Now Fig A. shows samples reflect all of Claim 11, 12, and 13.

Conclusion

Sitlick's does not disclose the art of individually timing controlled renewal of partition in display.

REGARDING CLAIM 18 AND 22 (FORMER CLAIM 7):

Aim or purpose of invention of Claims 18 and 22

In orchestra, pagination, that is division of whole composition into pages, are different between instruments. Music score for first violin has different pagination with cello's, flute's, trumpet's. Timing of Page-turn are generally different for each instrument. It is not possible for master station to deliver one page-turn signal for all slave stations.

Solution by this invention

But, all music have same number of total bars and beats, and they should be all synchronized when performed. This invention provide program which works as:

(1) Timing for renewal of each partition is decided from internal music time at every performance stations.

(2) One master station keeps count internal music time, and if necessary correct it by following up music performance. And the master station delivers internal music time to all slave stations.

By control of (1), each substation, which has any different pagination, can conduct sophisticated display renewal. By control of (2), keeping internal music time, which require heavy computer processing or human assistance, is centralized to only one master station.

Claim 18 and 20 (former claim 7) define the compound system, where master system generates music time (bar number and beat umber) and deliver it to all other slave systems. Display transition to new pages in the all slave systems are automatically executed, even they have different paginations. This is enabled by the base structure defined in Claim 11, Claim 18 (for master station) and Claim 20 (for slave station).

Master/Slave subsystems in Sitlick's

Sitlick's system has master/slave configuration. But, a paragraph sited in the office action describe how performer subsystem can be used as stand alone display or linked mode two page display. Two performer subsystems are used for the latter use. One of two work as a master, another worked as slave. The slave subsystem just receives display contents and display them.

In other place at C19 line 13 – 47, master/slave configuration for marching band is described. Master delivers music score information to each subsystem. And also it says "one master (e.g. band leader) can activate page turns for everyone". Here is delivery of page-turn signal.

Conclusion

There seems no description in Sitlick's about how to manage renewal of display at many subsystems holding different pagination scores in such case of orchestra. There is no description like (1) and (2) shown in above "Resolution by this invention" section.

REGARDING CLAIM 19 (FORMER CLAIM 8):

Aim or purpose of invention of Claim 19:

Aim is to provide convenient tools for communication between viewers, who are looking at score in display with different pagination. To this day, communication between conductor and performers or between ensemble members has been not convenient. Once rehearsal stop playing, much time, sometimes over one minute, are spent to just specify re-start point, especially if there is no bar number attached on staffs.

Solution by this invention:

This invention provides users GUI including direct pointing and showing pointer on notes on score display, also sharing music time corresponding to the note pointed with all members connected through network. Program components for this feature includes:

(1) Transformation (i) page and position in display to music time and (ii) music time to page and position in display (eighth instruction group). Transformation is available in both directions (i) and (ii).

(2) Response to user (conductor or a player) pointing on the display, and transformation (i) above mentioned

(3) Transmission of music time information to all subsystems

(4) Receiving the information

(5) Transformation (ii) above mentioned

(6) Replace display to the page acquired in (5) if necessary.

(7) Display pointer at the position acquired in (5).

Thus, even each subsystem displays different image, communication is easy. For example telling re-start position is within a second. Also, a note conductor talking about is recognized easily by players.

Use of touch screen display in Stlick's

Sitrick discloses use of touch panel input. In Fig. 17, it is used for selection of function such as "go forward a page" or "go back a page". It is used as function button. It is not used to pointing a note in music display and to transform it into the music time. He also discloses that touching left side portion of music display is recognized as turn a page back. These are not transformation from pointed note in display into music time.

There is no description about communication aide for viewers of different image on the screen.

Conclusion

Sitlick's does not teach or suggest program for communication between viewers of scores, especially by transmitting music time for everyone to identify the point or note which is indicated by talker, even both invention may use touch panel.

REPLY TO CLAIM REJECTIONS – 35 USC 103

REGARDING CLAIMS 12 AND 13 (former Claim 2 and 10):

Aim or purpose of invention of Claim s 12 and 13

Claim 12 and 13 define more detail about "third instruction group" in Claim 11. This provides smoother or subtler and safer page reveal transition in display. User does not worry about page-turn with this program.

Purpose of Claim 12 is to set distance between renewal partition and playing point as far as possible, so that connected music images are displayed in wide range area around playing point both in forward and backward direction.

Purpose of Claim 13 (former Claim 10) is to inhibit renewal of any partition while playing point is in "no renewal zone" spreading at vertically center portion of display. This is to help viewer memorize the impression of whole page.

Solution with Claim 12

To satisfy the purpose, renewal partition should apart enough from playing point in forward direction. Now, in the calculation of forward direction distance, the top partition should be considered to be adjacent to the bottom partition. So, from playing point full display size distance comes to itself. Then distance in forward direction plus distance in backward direction between plying point and renewal partition equal to full display size. Expression of "apart enough" is ambiguous. It depends how long it takes to play full one page. In case it is short, more than one third is good. In case it is long, more than one sixth seems good number. To tell the truth, making claim has problem because I can't decide good number for all applicable music. Then expression of "at least one partition away" is used in claim 12. With this claim, when playing point comes to the last partition, more than one partition at the top portion has been renewed.

Solution with Claim 13

To decide music time assigned to renewal of partition, there are some definition function shown in fig. 5. In sub-figure (B) and (C), there are 'non-renewal zone" indicated by 53 and 54. Music time inside these zone will not assigned as renewal timing. As a result, while playing point is in side these zone, no renewal will not occur. This means full one page is displayed, not partially revealed.

About Grub's

Grubb discloses some diversion technique (col.9 lines 30-40) to find most matched window position. This is pattern recognition technique to find location in the score and then follow up the performance using sound input.

About Sitlick's

Sitlick's disclosure sticks to art of page-turn. It does not disclose that each section (slice) has individual renewal timing expressed by music time.

Conclusion

Because of not clear wording, and not enough figures like Fig. A attached this time, meaning of claim 12, 13 or claim 11 might be unclear. But, it may be because controlled revealing of this invention is new concept. I appreciate reading paragraph [0026] in publication of this application, describing 3 example functions.

Grubb's disclosure is for different purpose, and disclose different procedure. Grubb's is relating to one of timing input at Claim 14. Therefore, Grubb does not teach or suggest contents of Claim 12 and 13.

REGARDING CLAIM 14 (FORMER CLAIM 3):

Aim or purpose of invention of Claim 14:

To get best fit timing input, in case there are plural timing input acceptable and their reliability are ranked from low to high. Problem here is that no input is steady.

In an embodiment of this application shown in Fig. 8, there are four level timing input: (i) detection from performing sound, (ii) detection from conductor's beat movement, (iii) direct input from button, (iv) external timing input. For a basic internal music time, there is internal timer measuring consecutive duration time from the second memory. Level (i) input is option. And it does not give all beats even when installed, because it can't detect beat during silent or long tone. Also, it is not reliable or robust with current technology. Level (ii) input is also option. And sometimes conductor does not give all beats, especially for top class orchestra. Level (iii) is standard reliable equipment, but its input is occasionally, case by case. Level (iv) is essential when the subsystem is used in slave mode.

Therefore, except in slave mode, inputs from these three levels do not come in constantly, but, if input comes in, it is more reliable than internal timing or lower level

input. Things are complicated because these inputs are not synchronized, but come in the vicinity in unknown sequence, or some or all do not come in. The fourth instruction group must deal with these complicated and indeterminate events.

Solution by this invention of Claim 14

For solution, program of this invention (Claim 14) includes instructions for

(1) Accepting multi level timing input: Even it may not come constantly, if it comes in, duration time of beat is calculated and recorded.

(2) Correction lower reliability level input by higher reliability level input: In case plural level input come in at a beat or a tick (usually they are not synchronized in the microscopic scale of millisecond), take higher level input as a final beat timing for recording of beat duration time.

These programs are shown in Fig. 8, especially block 314 and 350. And described in detail in description.

Grubb's invention

Grubb discloses three information as a source of procedure at Col. 5, lines 39-56. But, these three are not alternative candidate of location output. First, "performer's location at the time of the previous observation" is obviously old and behind the current location. Second, "observation most recently extracted" is data extracted from sound such as pitch or formant and is not location value. So, it can't be used as candidate location. Third, "estimated distance" is only usable as candidate of current location data. Anyway, Grubb does not intend to use one of three information directly as output. These three information are taken into mathematical procedure to get "score position density function" and then the most likely position as a result.

Grubb's uses only sound input as source.

Conclusion

Claim 14 defines multiple input other than internal timing (plural on basic). And the program deals the plural input according to their priority, where each of input may not comes in at every beat.

Grubb's method may be interpreted extensively as generating one timing input (as final output of procedure) other than internal timing (estimated distance). But it is not multiple input even in this interpretation (1 on basic).

REGARDING CLAIM 15 (FORMER CLAIM 4):

Background and merit of this invention of Claim 15

As far as it is for music display and page transition, it is not necessary to follow up performance with rigid preciseness. With technique of Claim 12, there is wide allowance. It is expected that following up performance by system fairly good in the next time performance using contents in the second data memory revised in the first performance. In the second time using only (iv) direct input, above mentioned, it works to correct internal timing only when difference becomes big. The correction input may be once in ten bars or more.

Therefore Claim 15 define modification takes place only "when correction happened". This means modification is done occasionally in macroscopic view. This avoids effect of timing deviation error in single beat to beat period correction input. If correction interval is 20 second and timing deviation error is 0.1 second, error in tempo is negligible 0.5%.

Grubb's invention

On the other hand, in Grubb's method typically shown in Fig.2, tempo adjustment is executed every observation (in boxes 34 and 36). If observation cycle is 1 second and error in adjustment is 0.1 second, error in tempo becomes 10%. This means it is adaptive but microscopic.

Conclusion

Claim 15 provide ratio calculation based on long period. Therefore Claim 15 has new idea and has its effect.

REGARDING CLAIM 16 AND 17 (FORMER CLAIM 5 AND 6):

Argument

Here let's use "tempo" as expressed by number no beat in a minute. And "Duration" as time length of from beat to beat. Even, both are tempo data in wider meaning of tempo. These are inversion number able to converge both way.

Historically, tempo has been expressed by number of beats in a minute. But, for human being, duration time is more intuitive. I don't mean duration as a number such as 500 msec. but sense of time length between two beats. Here comes recent metronome with input of tempo by tapping; tapping in consecutive two beats.

If we take stance that there is no difference between tempo and duration as human interface, we can't call said new metronome as an invention. But, the metronome matches human sense and works well.

One more argument is necessity of tempo/duration in macroscopic and microscopic view. It depends on genre of music. March usually played in strictly fixed tempo all through the work. In this case only macroscopic tempo is enough. But, in classical Romantic works, or aria in Italian opera, there are many agogic accent, means longer duration than normal for emphasizing a note. Or there are *accelerando* ritardando or transition between different tempo portions. In this case microscopic consecutive duration time is necessary to describe.

Claims 16 and 17 stands on finding the fact that consecutive duration time of beat is necessary and enough to precisely or faithful data to memorize performance time-likely.

Memorizing every duration of beats is new idea. And it works very well to mapping music performance into digital data, compare with just tempo specifications as written in printed music.

Also, by using memorized modified duration times, it is expected that far less correction is enough for the next time performance. So, it is possible to use system without correction tools using sound input or video input, which require big computing power. Just direct input devices like mouse or foot pedal works for correction of timing.

"What to memorize" is main part of invention. Even to store and read out data is generally well-known art. Correction is not easy thing to do.

About Grubb's

Grubb's disclose the art of following adaptively to the performance. But there is no teaching or suggestion about record tempo, place by place, and use the data at the second time playing.

REGARDING CLAIM 24 (FORMER CLAIM 9):

This claim stands on the same reason with description at above **Regarding Claim 16 and 17**. Also, this provides the way many public performers start with data on the media uploading to the second data memory of the system. It is expected to follow up performance fairly well.

NEWLY ADDED CLAIMS

Claim 20

One of effective tool to maintain correct internal music time. This claim based on paragraph [0092] in US published description (US-2007-0144334-A1)

Claim 25

Claim contents of paragraph [0092] as music notation media.

Claim 21

One of convenient tools enable by basic construction of this invention. This claim is based on paragraph [0043] in US published description (US-2007-0144334-A1)

CONCLUSION

I tried to explain the differences between this invention and sited references as much as I can. Your reconsideration is greatly appreciated.

ATTACHMENTS

Current Claims

FIG. A: For explanation; one sheet

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